

Exhibit D

IN THE UNITED STATES DISTRICT COURT FOR THE
NORTHERN DISTRICT OF OKLAHOMA

W. A. DREW EDMONDSON, in his)
capacity as ATTORNEY GENERAL)
OF THE STATE OF OKLAHOMA and)
OKLAHOMA SECRETARY OF THE)
ENVIRONMENT C. MILES TOLBERT,)
in his capacity as the)
TRUSTEE FOR NATURAL RESOURCES)
FOR THE STATE OF OKLAHOMA,)

Plaintiff,)

vs.)

4:05-CV-00329-TCK-SAJ

TYSON FOODS, INC., et al,)

Defendants.)

VOLUME I OF THE VIDEOTAPED
DEPOSITION OF MICHAEL McGUIRE, PhD, produced
as a witness on behalf of the Plaintiff in the above
styled and numbered cause, taken on the 18th day of
March, 2009, in the City of Tulsa, County of Tulsa,
State of Oklahoma, before me, Kristen Holmes, a
Certified Shorthand Reporter, duly certified under
and by virtue of the laws of the State of Oklahoma.

MICHAEL MCGUIRE, PhD, VOLUME 1, 3-18-09

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MICHAEL McGUIRE, PhD, VOLUME I, 3-18-09

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1 but there are dozens at least, if not hundreds, of
2 non-parametric statistical tests for a variety of
3 purposes.

4 Q What does non-parametric mean?

5 A Like I said, it -- it's -- it means what it's 05:53PM
6 not. It's not a parametric analysis, which is only
7 allowed for data that's normally distributed.
8 That's my definition of it, and I think it's pretty
9 close to what you'll find in a stat book.

10 Q Did you discuss with Clifton Bell the 05:53PM
11 difference in the sample sizes or the observation --
12 numbers of observe -- I'm going to start over. Did
13 you discuss with Clifton Bell the differences in the
14 number of observations in the various datasets and
15 whether or not that might affect the comparison? 05:54PM

16 A Yes, I did.

17 Q And -- and can you describe the nature of that
18 conversation?

19 A Yes. These dataset comparisons are really
20 unusual compared to what we normally have to work 05:54PM
21 with when we're doing comparisons of environmental
22 data. Usually we have too little information. In
23 these cases, we had, in some cases, many dozens, if
24 not hundreds to thousands of data points. The
25 danger -- there's a separate danger with these large 05:54PM

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March, 2009, in the City of Tulsa, County of Tulsa,
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and by virtue of the laws of the State of Oklahoma.

A P P E A R A N C E S

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I N D E X

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1 Q What was the purpose of this comparison that
2 you did?

3 A The purpose was to see if the TOC levels in --
4 in the IRW, as represented by the TOC data from the
5 IRW utilities, was in any way wildly different from 10:29AM
6 TOC levels in the rest of the United States.

7 Q And are you comparing, when you're doing this,
8 the average value for the Illinois River versus the
9 average value for the United States?

10 A In -- in these non-parametric statistic 10:30AM
11 comparisons, you're actually comparing the medians
12 as opposed to the averages.

13 Q So it's a comparison of the median values for
14 the entire United States?

15 A Yes. 10:30AM

16 Q Looking at your Figure 6, is it -- are there
17 values for TOC from these 296 utilities that are
18 lower than the values that were observed in the
19 Illinois River watershed?

20 A Yes. 10:31AM

21 Q Were there some higher?

22 A Well, let me amend that. There were values
23 that were equally low because the lowest values at
24 both datasets was the lowest limit of detection of
25 the analytical method that was being used. So, in 10:31AM

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1 you have literally nationwide coverage, even though
2 it was only 18 months. I think that it's pretty
3 representative of what is out there in the way of
4 TOC and raw water supplies in this country. This
5 also tracks with my further experience in dealing 10:43AM
6 with water utilities in the southeastern United
7 States, in the west, in New York State. I have
8 never seen any data that is wildly different from
9 the ICR data. I haven't done any statistical
10 comparisons, but it's based on my experience in 10:43AM
11 working with water utilities around the United
12 States since this data was collected.

13 Q So this data tells us what the median TOC
14 value was for the entire United States in 19 -- in
15 the period between 1997 and 1998? 10:44AM

16 A That's right.

17 Q Do you have any idea what it's like now?

18 A I don't have the data to do that analysis
19 right now.

20 Q Did you discuss any concerns with Clifton Bell 10:44AM
21 about comparing datasets from these two different
22 time periods?

23 A No. That was not his charge. His charge was
24 to do the statistical analysis. My charge was to --
25 to do the interpretation as to what that meant. 10:44AM

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1 Q Right, but did you -- did -- did he -- you or
2 he -- you and he discuss whether or not it was
3 statistically valid to compare datasets from two
4 different time periods?

5 A Yes. 10:45AM

6 MR. JORGENSEN: Objection.

7 A Yes. He was -- it was very clear that these
8 were what are called unpaired datasets, that they
9 were collected at different times and different
10 places, and Mann and Whitney U is perfectly valid 10:45AM
11 for comparing those two datasets.

12 Q Have you ever used Mann and Whitney U to
13 compare datasets from two different time periods?

14 A I've used the statistics dozens of times in my
15 career to compare all kinds of datasets collected at 10:45AM
16 different times, different places, through different
17 circumstances. It's -- you know, it's a
18 non-parametric statistical test that is exactly for
19 this purpose.

20 Q Okay. I guess maybe the question is -- that I 10:45AM
21 have is, have you used it before to compare datasets
22 that are collected with such large differences
23 between the time periods, you know, one '97 to '98,
24 one 2002 to 2008; have you done anything quite like
25 that before with the Mann-Whitney U statistical 10:46AM

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1 upon a survey or sampling.

2 Q Did you do a statistical analysis comparing
3 the median TOC data for -- from Lake Tenkiller water
4 intakes to the median TOC data collected from the
5 Broken Bow water treatment plant intakes?

12:42PM

6 A Yes.

7 Q Did you do that statistical analysis yourself
8 or did Clifton Bell do it?

9 A He did it under my supervision and direction.

10 Q Is that analysis reflected in the January
11 12th, 2009 memo that we discussed earlier? I'm
12 not --

12:42PM

13 A Yes, it is.

14 Q What is the exhibit number on that memo?

15 MR. JORGENSEN: It's 6. Here's one for
16 you, Dr. McGuire.

12:43PM

17 A There it is. Yes, that's included in Exhibit
18 6.

19 Q And is it based on this analysis that you
20 concluded that the average raw water withdrawn from
21 Broken Bow Reservoir TOC levels were higher than the
22 average raw water levels of TOC withdrawn from Lake
23 Tenkiller?

12:43PM

24 A No.

25 Q So what did you do the statistical analysis --

12:44PM

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1 Metropolitan we really revolutionized how
2 Metropolitan approached drinking water quality and
3 created the -- oh, the -- most comprehensive taste
4 and odor control -- monitoring and control program
5 in the country at the time. 02:57PM

6 Q And --

7 A Yeah, so --

8 Q I'm sorry. I didn't mean to interrupt.

9 A No, just -- just a -- just a variety of
10 different activities in that regard. 02:57PM

11 Q Are you aware of the scientific standards that
12 relate to drinking water quality?

13 A Yes.

14 Q Do you use those standards in your career?

15 A I do. 02:57PM

16 Q Did you participate in setting some of those
17 standards?

18 A Yes. I've been on a couple of -- of Standard
19 Method Committees and have contributed particularly
20 analytical standards dealing with taste and odor to 02:57PM
21 standard methods.

22 Q From a scientific point of view, not a legal
23 point of view, but from your group of scientists and
24 career, are you qualified to give the opinions that
25 are in your report? 02:57PM

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1 A Yes.

2 Q Let's turn to the world of statistics. Do you
3 use statistics in your work, Dr. McGuire?

4 A Yes, all the time.

5 Q How long have you used statistics in your 02:58PM
6 work?

7 A Ever since I worked at the Philadelphia Water
8 Department and began analyzing large datasets in
9 1973 approximately.

10 Q Is the statistical work that you did as part 02:58PM
11 of this report, the report we've been discussing for
12 the last two days, different from the statistical
13 work you typically do in your career?

14 A No.

15 Q Do you feel qualified to give the statistical 02:58PM
16 opinions that have been given in this report?

17 A Yes.

18 Q Who is Clifton Bell?

19 A Clifton Bell is an engineer with Malcolm
20 Pirnie who has specialized in statistical analysis 02:58PM
21 of environmental engineering datasets. He has -- he
22 keeps up on it because he is the go-to guy, and so
23 he always has at his fingertips the knowledge that,
24 you know, it would take a lot of us some time to
25 refresh our memory on, and so rather than trust my 02:59PM

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1 memory, I went to Clifton to -- to get that
2 analysis, but it's the kind of analysis I've done on
3 extremely large datasets throughout my career.

4 Q And did he agree with all the statistical
5 decisions and formulations that are set out in your 02:59PM
6 report?

7 A Yes.

8 Q Let's turn to the topic of algae and
9 cyanotoxins. Is whether or not particular types of
10 algae -- let me strike that. Let me start again. 02:59PM
11 Is -- is -- is the question of whether or not
12 particular types of algae will produce cyanotoxins
13 dependent on a number of variables or just one or --
14 one or few variables?

15 A No, a number of variables. 02:59PM

16 Q And what type of variables?

17 A Well, the production of cyanotoxins is a
18 function of the metabolism of these -- of these --
19 these organisms, and so their presence and how
20 abundant they are and what -- what environmental 03:00PM
21 triggers are affecting the production of
22 cyanotoxins, these are all relevant to the level of
23 cyanotoxins that might be in a water supply.

24 Q And the factors that are relevant to whether
25 or not algae might produce cyanotoxins in a water 03:00PM

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